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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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REED SMITH LLP
3110 FAIRVIEW PARK DRIVE, SUITE 1400
FALLS CHURCH, VA 22042

EXAMINER	
ARIANI, KADE	

ART UNIT	PAPER NUMBER
1651	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/563,272	BERGE, ROLF	
	Examiner	Art Unit	
	KADE ARIANI	1651	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 September 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *17,21-25 and 34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *17, 21-25 and 34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

The amendment filed on September 29, 2008, has been received and entered.

Claims 26-33, and 35-41 have been canceled.

Claims 17, 21-25, and 34 are pending in this application and were examined on their merits.

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 09/29/2008 has been entered.

Applicant's arguments with respect to claims 17, 21-25, and 34 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 17, 21-25 and 34 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for a method of treating fatty liver, hypercholesterolemia, or hyperhomocysteinemia by lowering plasma cholesterol level, lowering the concentration of plasma homocysteine, and lowering the levels of hepatic triacylglycerols, does not reasonably provide enablement for a method of preventing fatty acid liver, a method of preventing hypercholesterolemia, and a method of preventing hyperhomocysteinemia. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with these claims.

Factors to be considered in determining whether a disclosure meets the enablement requirement of 35 U.S.C. 112, first paragraph, have been described by the court *in In re Wands*, 8 USPQd 1400 (CA FC 1988). Wands states at page 1404,

> "Factors to be considered in determining whether a disclosure would require undue experimentation have been summarized by the board in Ex parte Forman. They include (1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims."

The nature of the invention

The claims are drawn to a method of preventing fatty liver, hypercholesterolemia, or hyperhomocysteinemia. The invention is in a class of invention, which CAFC has characterized as "the unpredictable arts such as chemistry and biology." Micogen Plant Sci., Inc. v. Monsanto Co., 243 F.3d 1316, 1330 (Fed Cir. 2001).

The breadth of the claims

The claims broadly encompass preventing all cases of fatty liver, hypercholesterolemia, or hyperhomocysteinemia by administering a composition comprising an enzyme treated FPH material.

Quantity of Experimentation

The quantity of experimentation in this area is extremely large due to the variation between individuals and underlying cause of the each condition. This would require years of inventive effort, with each of the many inventing steps, not providing any guarantee of success in the succeeding steps.

The unpredictability of the art and the state of the prior art

The art is unpredictable with regard to the cause and the mechanism of development of fatty liver, hypercholesterolemia, and hyperhomocysteinemia.

Van Guldener et al. teach the most prevalent known causes of hyperhomocysteinemia are genetic defects, renal failure, etc. Elimination of the

underlying cause is not always feasible, and in most hyperhomocysteinemia patients with cardiovascular disease, no definite cause can be established (p.1451 2nd column 2nd and 3rd paragraphs).

Moreover, Oliveira et al. (Nutrition Journal, 2003, Vol. 2, p.1-5) teach fatty liver is the most common hepatocellular change found in liver biopsies in humans. Oliveira et al. teach several predisposing factors have been related to nonalcoholic fatty liver (NAFLD), the pathogenesis of NAFLD and its progression to fibrosis and chronic disease are still unclear (p.2 1st column 1st and 2nd paragraphs).

Regarding liver injury, alcohol-induced hyperhomocysteinemia, and cholesterol accumulation in the liver, Ji et al. (Gastroenterology, My 2003, Vol.124, p.1488-1499) teach the mechanism leading to homocysteine accumulation could be independent of the mechanisms that lead to cholesterol accumulation (p.1497 2nd column 1st paragraph).

Working examples

In the specification, the working examples are only drawn to lowering plasma cholesterol level, lowering the concentration of plasma homocysteine, and lowering the levels of hepatic triacylglycerols in Zucker rats.

Guidance in the Specification

The specification does teach how this method can be used for preventing all cases of fatty liver, hypercholesterolemia, and hyperhomocysteinemia.

Level of Skill in the Art

The level of skill in the art is deemed to be high.

Conclusion

Thus given the broad claims, the unpredictability of that art, the large quantity of research required to define these unpredictable variables, the lack of guidance provided in the specification, the working examples, and the negative teachings of the art, it is the position of the examiner that it would require undue experimentation for one of skill in the art to perform the method of the claim as broadly written and the instant application does not support the breadth of the claims.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The rejection of Claims 17, 21-25 under 35 U.S.C. 102(b) as being anticipated by Kristisson & Rasco (Critical Reviews in Food Science and Nutrition, 2000, Vol. 40, No.1, p. 43-81) is withdrawn due to Applicants amendments to the claims filed on 09/29/2008.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 26-33, and 35-41 have been cancelled, therefore the rejection of Claims 26-33, and 35-41 under 35 U.S.C. 103(a) as being unpatentable over Nielson (US 2002/0182290 A1) and Kristisson & Rasco (Critical Reviews in Food Science and Nutrition, 2000, Vol. 40, No.1, p. 43-81) and further in view of Sharma et al. (Bioresource Technology, 2002, Vol. 85, p.327-329), is withdrawn.

Claims 17, and 21-25 and 34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aoyama et al. (Biosci Biotechnol. Biochem., 2000, Vol. 64, No.12, p.2594 -2600) in view of Nielson (US 2002/0182290 A1) and further in view of Bergeron et al. (Journal of Nutrition, 1992, vol. 122, p.1731-1737) and further in view of Liceaga-Gesualdo et al. (Journal of Food Science, 1999, Vol. 64, No.6, p.1000-1004) and further in view of Van Guldener & Stehouwer (Expert Opin. Pharmacother. 2001, Vol. 2, No. 9, p.1449-1460) and further in view of Cahu et al. (Aquaculture, 2001, Vol. 200, p.161-180).

Claims 17, 21-25 and 34 are drawn to a method of treating fatty liver, hypercholesterolemia, or hyperhomocysteinemia, comprising administering to an animal in need of such treatment, a pharmaceutical or nutritional composition comprising an enzyme treated fish protein hydrolysate (FPH) material for lowering the concentration of plasma cholesterol, homocysteine and hepatic triacyglycerols, wherein the animal is human, the animal is an agricultural animal, the animal is a domestic animal, the animal is a fish, the nutritional composition is a food grade product, and the fish protein hydrolysate material is fish flesh remnants on fish bone frames after filleting.

Aoyama et al. teach a method of treating hypercholesterolemia comprising administering to an animal in need of such treatment (obese mice), a nutritional composition comprising milk whey protein hydrolysate, a nutritional composition comprising soy protein hydrolysate (Abstract, p.2595 Table 1. 1st column 4th and 6th rows). Aoyama et al. teach it is plasma cholesterol-lowering effect was more marked in the peptide than in the protein (p.2594 2nd column 2nd paragraph lines 7-9). Aoyama et al. teach in general amino acid mixtures simulating animal proteins induce a similar degree of hypercholesterolemia to the intact proteins (p.2598 2nd column 2nd paragraph). Aoyama et al. also teach a peptide (obtained from a globin digest) suppressed elevation of the serum triglycerides level (p.2598 2nd column 3rd paragraph).

Aoyama et al. do not teach administering an enzyme treated fish protein hydrolysate (FPH) material, lowering the concentration of plasma homocysteine and hepatic triacyglycerols, agricultural animal, domestic animal, fish, and the fish protein hydrolysate material is fish flesh remnants on fish bone frames after filleting. However,

Nielson teaches a nutritional composition comprising an enzyme treated fish protein hydrolysate material, useful as a feed ingredient in animal feed formula, animals including human, cows, pigs, broiler chickens, an agricultural animal, fish, and a food grade product (page 3, 0030 and 0031). Nielson teaches hydrolyzing fish flesh remnants with a protease enzyme (Protamex), to yield a hydrolysate, material is fish flesh remnants on salmon bone frames after filleting (page 3 0037). Nielson also teaches fish material comprise fish oil (p.2 0021).

Further motivation to use fish protein hydrolysate in the method of Aoyama et al. is in Bergeron et al. who teach feeding fish protein, combined with either corn oil or coconut oil, resulted in significantly higher HDL cholesterol concentrations in comparison with soybean protein (p. 1735 2nd column 2nd Discussion 2nd paragraph). Bergeron et al. teach dietary proteins and lipids when simultaneously combined in purified diets, they acted synergistically to regulate HDL triglyceride concentrations in the rabbit (it must be noted that HDL is considered to be good cholesterol) (p.1734 1st column 2nd paragraph). Bergeron et al. also teach dietary proteins and lipids exerted a synergistic, as opposed to separate action, in the regulation of hepatic cholesterol concentrations (p.1734 2nd column 2nd paragraph).

Moreover, Liceaga-Gesualdo et al. teach enzymatic treatment of fish protein releases methionine (increase in the level of methionine in FPH compare to control), methionine is 4.94 (g/100g) in FPH and 2.72 (g/100g) in control (p.1002 2nd column Table 2. 1st columns and 12th row).

Furthermore, Van Guldener et al. teach the only source of homocysteine in humans is methionine, which can be derived from the diet or from breakdown of endogenous proteins (p.1450 2nd column 2nd paragraph). Van Guldener et al. teach reducing plasma homocysteine concentration by dietary means, methionine restriction with or without cystine supplementation. Van Guldener et al. further teach fish oil is one of the drugs that has been tested in order to reduce plasma homocysteine concentration (p.1451 1st column 3rd paragraph, and Table 1. 1st column 9th row).

Further motivation to administer fish protein hydrolysates to fish is in Cahu et al. who teach growth of salmon fry was enhanced by replacing the amino acid nitrogen in a fish meal based diet by fish protein hydrolysate. Cahu et al. teach incorporating di- and tri-peptides (obtained from fish meal hydrolysate) in the diet resulted in an improvement of the main biological parameters, growth, survival, and skeletal formation (p.175 4th and 5th paragraphs).

Therefore, a person of ordinary skill in the art at the time the invention was made could have been motivated to use the fish protein hydrolysate material as taught by Nielson in the method as taught by Aoyama et al. to provide a method of treating hypercholesterolemia with the predictable results of lowering the plasma cholesterol level. The motivation as taught by Bergeron et al. would be that feeding fish protein resulted in significantly higher HDL cholesterol concentrations in comparison with soybean protein.

Conclusion

No claims are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kade Ariani whose telephone number is (571) 272-6083. The examiner can normally be reached on 9:00 am to 5:30 pm EST Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Wityshyn can be reached on (571) 272-0926. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kade Ariani
Examiner
Art Unit 1651

/Ruth A. Davis/
Primary Examiner, Art Unit 1651